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MAY 19 2008

Docket No. F-8632

Ser. No. 10/531,815

**REMARKS**

Claims 1-6 and 16-28 remain pending in this application. Claims 7-15 are previously cancelled. Claims 1-6 and 19-27 are rejected. Claims 16-18 and 28 are withdrawn from consideration.

Claims 1, 4-5, and 19-27 have been rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 3,062,457 (Willems).

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *See Verdegaal Brothers Inc. v. Union Oil Company of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Claim 1 recites moving objects transonically to thereby comminute inorganic materials. Willems fails to disclose this limitation. The reference in Willems to supersonic is not a reference to speed, rather, it is a reference to frequency. The Office Action states on page 4, in response to such an argument in the Amendment of August 24, 2007 ("prior Amendment") that Willems "clearly discloses that the rotor carries an inner annular row of vanes 3 for centrifugal acceleration of the substances to be treated." The acceleration of the substances to be treated, if any, does not anticipate the recitations of claim 1 since claim 1 is directed to moving objects at transonic speeds and these objects are not the same as the substances to be treated. Thus, the speed of the movement of the substances to be treated cannot disclose the recitations of claim 1 since claim 1 recites that the movement of objects to comminute the inorganic materials is what moves at

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transonic speeds. Additionally, there is no disclosure in Willems that the substances to be treated move at transonic speeds.

Moreover, the Office Action has not demonstrated that the objects which perform the comminution in Willems move at transonic speeds and therefore the USPTO has not met its burden to demonstrate anticipation. Indeed, the movement of blades or vanes in Willems is significantly below transonic speed. For example, in column 4, lines 50-65 of Willems is a table with the parameters for the invention of Willems. In the table, the largest outer circumference is 880 mm. The speed is 3000 revolutions per minute. Thus, the maximum speed of movement of the outer circumferential portion of the equipment is 158.4 km/hr (about 99 mph), which is many times lower than transonic speed. Thus, the largest speed that the blades or vanes can have in Willems is explicitly disclosed in Willems to be far from transonic speed.

On page 4, the Office Action states that "high velocity and acceleration are achieved by the use of an oscillatory pressure which is [sic] supersonic frequency; there stand to reason that at least some of the partials would be moving at transonic speed." It is unclear to Applicants what the Office Action means by "partials". However, as shown above, the movement of the blades and vanes in Willems is far below transonic speed and therefore claim 1 is not anticipated by Willems et al.

Additionally, the fact that there is supersonic frequency of vibrations disclosed in Willems does not show that there are objects rotating at transonic

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speeds. In column 7, lines 22-47 of Willems it is disclosed how the frequency is calculated. In that disclosure, the innermost row has 24 blades, the next row has 100 blades, the next row has 150, and the last row has 200. The rotary speed is 3000 rpm. The way the frequency of vibration is calculated is as follows:  $((24 \times 100) + (100 \times 150) + (150 \times 200)) \times 3000 / 60 = 2,370,000$  cycles per second. Thus, the vibrations are the addition of the products of the number of blades of one row with the next row times the number of cycles. Thus, the calculation of vibrations in Willems involves taking into account all of the blades in the entire apparatus. There is no disclosure or suggestion in Willems that the rotation of the blades or vanes would have to be at transonic speeds to result in supersonic vibrations, especially since the vibrations to be created involve mathematical calculations involving all of the blades rather than just a single blade.

Additionally, the Office Action has not shown that the pulse of the impact pressure fronts is less than 10 $\mu$ s in Willems.

Accordingly, at least for the aforementioned reasons claim 1 is patentable over the cited art. Claims 2-6 are patentable at least for the reason that they depend from a patentable base claim. See *In re Royka and Martin*, 180 USPQ 580, 583 (CCPA 1974).

In the prior Amendment, Applicants made the following statement: "Claim 4 is further patentable at least because Willems fails to disclose aerodynamically shaped objects which are rotating. There is no disclosure of aerodynamically shaped

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objects and there is no disclosure of the rotation of objects. Claim 5 is further patentable at least because there is no disclosure of the objects rotating in Willems." Applicants wish to clarify that the aforementioned statement was intended to convey that it is Applicants' position that there are no objects being rotated at transonic speeds in Willems even though the term "transonic" was not explicitly stated in such statement.

Claim 19 recites moving objects transonically to thereby comminute materials. Accordingly, claim 19 is patentable at least for the same reasons as claim 1, as explained above. Claims 20-27 are patentable at least for the reason that they depend from a patentable base claim.

Regarding claim 23, there is no disclosure in Willems of moving objects transonically relative to a common axis of rotation and claim 23 is further patentable for this reason as well.

The Office Action states on page 4 that "the examiner would like to point out that the shape of the object does not further limit the method steps since the claims are directed to a method and not an apparatus." Applicants respectfully point out that the objects are part of the process and that the shape of the objects further limits the process and must be considered for patentability.

Claims 2-3 and 6 have been rejected under 35 U.S.C. § 103(a) as obvious under U.S. Patent No. 3,062,457 (Willems).

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Claims 2-3 and 6 are patentable at least for the reason that they depend from a patentable base claim. *See In re Fine*, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988).

Claim 6 is further patentable at least for the reason that a protective gas is not disclosed or suggested in Willems. The Office Action states on page 3 that the limitations of claim 6 "would have been obvious modifications by one skilled in the art once the basic apparatus was known." However, the Supreme Court has made clear that rejections on obviousness grounds "cannot be sustained by mere conclusory statements". *See KSR International Co. v. Teleflex Inc. et al.* 82 USPQ2d 1385, 1396 (2007). Accordingly, the USPTO has not met its burden of demonstrating *prima facie* obviousness of claim 6.

No fee is believed due. If there is any fee due the USPTO is hereby authorized to charge such fee to Deposit Account No. 10-1250.

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In light of the foregoing, the application is now believed to be in proper form  
for allowance of all claims and notice to that effect is earnestly solicited.

Respectfully submitted,  
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